ANNUAL REPORT

of the

DAIRY PROCESSING

and

DAIRY PRODUCTION BRANCHES

for the Year

1988 - 1989

Alberta
AGRICULTURE

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DAIRY PRODUCTION BRANCH

The dairy production branch responsibilities included dairy farm inspection, milk quality assurance and support for or coordination of extension activities, advisory services and research pertaining to the dairy industry. Milk recording for purposes of improving dairy herd management on Alberta dairy farms is supported through a grant to Alberta Dairy Herd Improvement Services.

Dairy Farm Inspection

Inspection and advisory services were provided to Alberta milk producers in the areas of milk quality, milk production, equipment standards and construction and upgrading of dairy facilities.

Dairy Farm Inspection staff performed 3,281 farm inspections in 1988-89, and an additional 1,832 farm consultations.

The new Dairy Industry Act and Regulation came into force June 1, 1988. One of the most important aspects of the new legislation was the requirement that all producers meet a single quality and premises standard as of August 1, 1988. The few remaining producers who had not met the higher standards earlier on a voluntary basis either completed the upgrading or ceased operations prior to August 1, 1988. As of December 31, 1988, there were 1,464 milk producers, down from 1,502 a year earlier, which was consistent with recent trends in producer numbers.

A total of 36,407 milk samples were analyzed for compliance with current milk quality standards. During the twelve month period ending March 31, 1989, the Milk Grade and Price Program recorded 70 standard plate count infractions; 20 freezing point infractions; 81 inhibitor infractions; and 117 somatic cell count infractions - totalling 288 infractions.

A non-compliance rate of 3.3% was achieved, a further improvement from 3.8% the previous year. However, 49 loads of milk were destroyed due to inhibitor contamination - an increase of 15 loads compared to 1987-88.

The Milk Grade and Price Program and advisory services provided to producers contributed to the excellent quality of milk produced in Alberta in 1988-89. The milk processors, through farm service programs, continued to support milk quality improvement on dairy farms.

Funds collected from producers resulting from milk grade deductions were allocated to pay innocent producers for lost milk, to compensate milk transport operators when confirmation was required for suspicious inhibitor positive loads and for the disposal of loads which tested positive. Funds remaining were distributed to milk producers on a monthly basis by the Alberta Dairy Control Board.

Bulk milk somatic cell counts continued to be monitored and advisory assistance was provided to reduce the incidence of mastitis in dairy herds. Bulk milk tank somatic cell counts averaged 283,828 cells

per millilitre - a significant improvement of 30,000 cells per millilitre as compared to 1987-88.

The Award of Excellence, sponsored by Alberta Agriculture, was introduced in 1986 to recognize dairy producers for excellence in quality milk production and maintenance of dairy premises. The Award of Excellence was presented to 216 milk producers at the Annual Alberta Dairymen's Association Convention in February 1989, as compared to 76 in the first year of the program. The response by the milk producers of Alberta has been excellent.

TABLE 1

The following table summarizes the activities of Dairy Farm Inspection. Comparisons are based upon April 1 to March 31 year basis.

	1987-88	1988-89
Number of Certified Milk Producers	1,495	1,464
Number of Industrial Milk Producers	7	N/A
TOTAL PRODUCERS	1,502	1,464
Inspections of Dairy Farm Premises	3,304	3,281
Non-Inspection Dairy Farm Calls	1,819	1,832
TOTAL FARM CALLS	5,123	5,113
TOTAL RAW MILK SAMPLES ANALYZED	36,743	36,407
Quality of Milk Samples Analyzed		
Fluid Milk Samples Non-Compliance (75,000/mL S.P.C.)	3.8%	3.3%
Industrial Milk Samples Non-Compliance (200,000/mL S.P.C.)	8.0%	N/A
Industrial Milk Samples which met Fluid Milk Standards	84.0%	N/A
Average Somatic Cell Counts - Fluid	313,908	283,828
(Leucocytes) - Industrial	547,194	N/A
Number of Infractions - SPC	97	70
- Inhibitors	72	81
- Cryoscopic Analysis	16	20
- Somatic Cells	N/A	117
TOTAL INFRACTIONS	185	288

Number of Infractions per Producer:

	1984-85	1985-86	1986-87	1987-88	1988-89
1 Infraction	199	179	153	133	184
2 Infraction	73	64	63	38	60
3 Infraction	33	19	19	10	27
4 Infraction	7	10	7	2	11
More than 4	4	2	6	2	6
	316	274	248	185	288

TABLE II Estimated Farm Value of Alberta Milk Production April 1988 - March 1989

The quantity, price, value and utilization of milk production during April 1988 to March 1989 are reported in the following table. To indicate changes from the previous year, 1987-88 figures have been included.

	Year	Butterfat Production '000 kg	Milk Equivalent '000	% of Total	Prices $	Value $'000
Butterfat for Creamery Butter	1988-89	750	20,844 L	3.42	4.630/kg	2,695
	1987-88	684	19,542 L	3.32	4.610/kg	3,153
Milk Purchased for the Manufacture of Powder and Butter[1]	1988-89		117,744 L	19.30	40.81/hL	48,056
	1987-88		115,527 L	19.60	39.93/hL	46,130
Milk for Cheesemaking	1988-89		130,403 L	21.42	40.87/hL	53,294
	1987-88		119,496 L	20.27	39.93/hL	47,715
Milk for Concentrating and Milk & Butterfat for Ice Cream & Misc. Products[2]	1988-89		62,562 L	10.28	42.65/hL	26,683
	1987-88		57,182 L	9.70	41.63/hL	23,805
Milk Purchased for Fluid Purposes	1988-89		260,576 L	42.81	50.46/hL	131,489
	1987-88		260,119 L	44.13	47.89/hL	124,571
Skimmilk Kept on Farms	1988-89		17,821 L	2.93	22.19/hL	3,954
	1987-88		17,588 L	2.98	18.38/hL	3,233
Estimated Federal Subsidy	1988-89					18,637
	1987-88					21,043
TOTAL	1988-89		609,950			284,808
	1987-88		589,454			269,650

[1]Includes milk used for the making of cottage cheese.

[2]Does not include butterfat from creamery butter used in the manufacture of ice cream

TABLE III

Milk Cow Numbers

Year	No. Cows June 1st	Year	No. Cows June 1st
1950	297,800	1978	148,000
1955*	285,000	1979	135,000
1960	279,000	1980	138,000
1965	262,000	1981	142,000**
1970	198,000	1982	158,000**
1973	169,000	1983	157,000**
1974	169,000	1984	157,000**
1975	170,000	1985	150,000**
1976	152,000	1986	152,000**
1977	155,000	1987	130,000**
		1988	128,000**

* From 1955 forward, average butterfat test 3.5%; previous years were 3.6%.

** Census figure as of January 1 of that year.

Milking Management

A milking equipment evaluation unit was developed. This unit will be used to evaluate various milking equipment components and improving test procedures.

The Dairy Computer Software Evaluation Committee was established to evaluate existing dairy software packages and report the findings to Alberta dairy producers. The committee will also coordinate the development and evaluation of in-house dairy software packages.

Branch staff presented three papers at the 1988 American Dairy Science Association convention: 1) Milk Metering vs Dipstick Method of Measuring Milk in Farm Bulk Milk Tanks in Alberta, 2) The Effect of the Introduction of Monthly Individual Cow Somatic Cell Counting on Milk Producer Mastitis Control Procedures and on Bulk Tank Somatic Cell Counts, and 3) Effects of a Hydraulic Milking Device on Cow Management.

Milk Metering - Analysis of data derived from our evaluation of milk metering technology indicated that average meter readings can vary by up to ±50 litres when compared to the average "dipstick" reading on some farms. Some technical problems with milk metering systems were identified which caused milk measurement errors. The study also indicated that the accuracy of dipstick measurement is also a problem. Accurate and fair measurement of milk is important and further investigation of this discrepancy is planned.

An outbreak of Nocardia spp. mastitis affected 118 cows on 45 Alberta dairy farms during 1988. Prior to this, Alberta only had one confirmed case in 1985. Other regions of Canada experienced a similar phenomenon. This severe form of mastitis did not respond to antibiotic therapy. Most cows were culled soon after they became infected. A warning was issued to producers concerning the use of intramammary antibiotic therapy.

A total of 79 equipment analyses were completed by the two milking management specialists. Fifty-two new or updated milking systems were evaluated. Another 24 calls were completed for stray voltage problems. Milking equipment washing problems accounted for 26 farm calls and 19 farms calls were made for consultation on proposed milking system upgrades.

Milk Recording

Alberta Dairy Herd Improvement Services became responsible for all data processing and control functions as of April 1, 1988. Delivery of field services to participating dairy producers had been transferred from Alberta Agriculture to Alberta Dairy Herd Improvement Services in 1984.

During the year the Alberta dairy producers who had been enrolled on the Federal Record of Performance program were converted to the Alberta Dairy Herd Improvement computer program. This conversion brought all milk recording participants in Alberta under one

program. Agriculture Canada supports the operations of Alberta Dairy Herd Improvement Services through an annual grant.

The dairy production branch, in addition to providing Alberta Agriculture's grant to Alberta Dairy Herd Improvement Services is responsible for computer costs and coordination of extension services related to the use of the milk recording data by Alberta producers.

There were a total of 889 milk recording participants in Alberta as of December 31, 1988. Of that total, 18,637 cows in 263 herds were enrolled on the supervised program at a cost of $20.00/cow/year. Of this number, 135 herds had been converted from the Federal Record of Performance program during the year. A total of 626 herds with 40,181 cows received owner-sampler services from Alberta Dairy Herd Improvement Services at a cost of $5.80/cow/year. Monthly somatic cell counting for individual cows was provided to 741 producers at a cost of $2.00/cow/year.

Average yearly production per cow on milk recording was 7,195 kg of milk, 253 kg of milk fat and 230 kg of protein. These levels of production convert to the following BCA's - 155 milk, 146 milk fat and 156 protein. The average cow had a 13 month calving interval and contributed to the herd for 2.6 lactations.

TABLE 1

HERD ENROLMENT

	OFFICIAL		OWNER/SAMPLER	
BREED	NO. HERDS START OF YEAR	NO. HERDS END OF YEAR	NO. HERDS START OF YEAR	NO. HERDS END OF YEAR
Ayrshire	0	13	4	4
Brown Swiss	1	2	3	2
Guernsey	2	2		
Holstein	123	210	623	611
Jersey	3	16	14	9
TOTAL	129	263	644	626
AVERAGE HERD SIZE	74	71	63	64

TABLE II

ANIMAL ENROLMENT

	OFFICIAL				OWNER-SAMPLER			
	NO. OF ANIMALS ENROLLED				NO. OF ANIMALS ENROLLED			
BREED	REGISTERED	NIP A OR HIGHER	NIP U OR GRADE	TOTAL	REGISTERED	NIP A OR HIGHER	NIP U OR GRADE	TOTAL
AYRSHIRE	650	27	6	683	87	9	90	186
BROWN SWISS	74	3	6	83	34	19	114	167
GUERNSEY	46	2		48	3	6	16	25
HOLSTEIN	8,806	7,034	1,209	17,049	2,212	19,899	17,317	39,428
JERSEY	682	26	24	732	98	31	168	297
SHORTHORN						1	2	3
OTHER			42	42			75	75
TOTAL	10,258	7,092	1,287	18,637	2,434	19,965	17,782	40,181

TABLE III

SEMI-ANNUAL REGIONAL DHI PRODUCTION SUMMARY

(BASED ON DAIRY HERD IMPROVEMENT PRODUCTION RECORDS AS OF DECEMBER 31, 1988)

REGION	# OF HERDS WITH RHA*	# OF COMPLETED RECORDS	305 DAY PRODUCTION (kg)			305 DAY BCA*			CALVING INTERVAL (months)	AVG. AGE OF HEIFERS AT FIRST CALVING (months)	AVG. # OF LACTATIONS PER COW
			MILK	FAT	PROTEIN	MILK	FAT	PROTEIN			
1. Lethbridge-Brooks	141	9479	7450	256	236	161	150	161	12.7	27.2	2.5
2. Calgary	103	5165	7250	259	236	159	150	162	13.2	28.8	2.7
3. Red Deer	271	13142	7151	253	230	153	146	156	13.1	28.7	2.6
4. Vermilion	67	3588	6704	235	215	145	137	146	13.0	28.0	2.6
5. Edmonton	248	12610	7151	253	228	152	145	153	13.1	29.3	2.7
6. Peace River	16	1177	7369	258	238	162	150	164	13.2	27.3	2.6
PROVINCE	846	45161	7195	253	230	155	146	156	13.0	28.4	2.6

* RHA: Rolling Herd Average
**BCA: Breed Class Average

Resource Services

Dairy production branch and field services regional staff cooperated in providing a number of dairy programs and seminars across the province. Over 350 people attended a mastitis control series at four locations: Lethbridge, Olds, Leduc and Grande Prairie.

The "Alberta Dairy Producer", a monthly newsletter, continued to be a valuable source of information on production, marketing and research. New regular columns were introduced focussing on milking equipment, research and marketing.

A film entitled "A Year In The Life" was produced. The film covers dairy reproduction basics such as nutrition and heat detection. Other dairy films produced by Alberta Agriculture continue to be very popular.

The second annual Alberta Dairy Congress was a success. Approximately 1,500 people attended the two day event, which featured a trade show, educational seminars and the Western Canadian Classic dairy show.

The Annual Dairy Seminar was renamed The Western Canadian Dairy Seminar. A high quality program and a change of location to Kananaskis made for a successful event.

Concern was expressed at both producer and processor levels of the dairy industry about the possible impact of using bovine somatotropin. Consumer perception that bovine somatotropin may be

harmful caused milk from cows under bovine somatotropin test in dairy research herds to be eliminated from the market.

Restructuring of the milk marketing system in the province remained unresolved with various proposals being advanced by different groups within the industry during the past year. This issue is a high priority for resolution in 1989.

Regional Activities

Branch staff were involved in the planning for a Dairy Awareness Day held in June in Red Deer. The response from the general public was very positive.

Individual consultations with producers were increased. Topic areas for consultation were ration formulation, milking management and quota.

Regional staff became more involved in dairy research through on-farm demonstrations and summarizing reports for publication.

DAIRY PROCESSING BRANCH

Overview

Total milk supply was up slightly from the previous year. Fluid milk sales, on a per capita basis, continued to improve but were still below the level of previous years. Better quota management by producers resulted in no milk being shipped out of the province during the "flush" season. During this time the milk drying plants and some cheese manufacturing plants were operating at near maximum capacity.

Amendments to the Dairy Industry Act and a new regulation under the Act were proclaimed during the year. Included in the amendments to the Act were provisions for the licensing of pasteurizer operators, the establishment of a special fund for the protection of producers for the payment of milk or cream supplied by them to a dairy manufacturing plant and a number of other changes to bring the Act up to date.

The changes to the regulation were more substantive and included requirements for the production of milk, its grading and transportation, the pasteurization of dairy products, standards of composition and quality for dairy products and provision for new dairy products. Much of this had been included in regulations under the Public Health Act.

Dairy Manufacturing Plants

The renovation and modernization of most plants continued in varying degrees of complexity. A high level of interest continued for the establishment of dairy manufacturing plants, particularly for the manufacturing of ice cream, cheese and the use of goat's milk. Although several enquiries were received, only two applications were made because of high cost and uncertainty of milk supply.

One application, for the manufacture of cream cheese using the ultra-filtration process, was approved for a Lethbridge plant. The other, for manufacturing cheese on a producer's farm in southern Alberta, was not approved.

Existing plants continued to investigate the addition of product lines to their operation. In addition to the cream cheese mentioned above, fluid milk plants introduced 1% milk to the market. One firm commenced the processing of dairy cordials to coincide with the Christmas season. Others added additional cultured dairy products or frozen dairy products. Two new designs of SL-ICE cream were introduced, one featuring the face of a tiger and the other a head of "Rudolph", complete with a red nose, to follow on the success of the panda SL-ICE cream.

The new fluid milk plant in the northeast part of the province commenced operation and packaged all of their products in plastic jugs. Other fluid milk processors marketing in the area also

introduced the plastic jugs in response to wide spread consumer acceptance of this new package.

The Pincher Creek Co-operative Association Ltd. closed its creamery division, one of the two remaining plants that relied on farm separated cream. The creamery had approximately 15 shippers when it closed. These cream producers have the option of shipping to the Central Alberta Dairy Pool.

Central Alberta Dairy Pool has consolidated its butter manufacturing into its Red Deer plant. Farm separated cream is received at the branch plants and forwarded to the main plant.

An independently operated plant in the Crowsnest Pass area discontinued the processing of fluid milk to concentrate on the manufacture of mozzarella cheese.

The major program introduced a year ago for the inspection and testing of milk pasteurization units continued as high priority. All components of the pasteurizers are inspected and subjected to a variety of tests to ensure that all dairy products processed through them are effectively pasteurized and that the pasteurized products cannot be contaminated with raw product. Most plants have completed the necessary modifications and have had the units approved. A few are awaiting the final inspection. The plants had to have the pasteurization units approved by the end of the calendar year 1988 or to have negotiated completion date to be eligible for the 1989 license. The cooperation from and interest by the industry has

been exceptionally good. Alberta is one of three provinces actively involved in a pasteurizer inspection program.

As all operators of pasteurization units must be licensed, the branch has prepared a Pasteurizer Operator training and testing program using the Pasteurizer Operator Manual as the main study guide. Nine courses are scheduled throughout the province for early in the new fiscal year. Over 180 operators have applied for the courses. After successfully passing an examination, pasteurizer operators are eligible to apply for a Pasteurizer Operator License. Alberta is the only province presently requiring that operators of pasteurizer units be licensed.

Plant inspection programs were continued to ensure compliance of all Alberta dairy manufacturing facilities and their products with existing regulations.

The branch continued to participate in the federal in-depth plant inspection program. Most of the fluid milk processing plants are newly built or recently renovated and continue to receive high scores upon inspection.

This branch continued to participate, and represent the four western provinces, on a committee to review and update the plant inspection program. This is the first major review since the program was introduced in 1971. The committee members represent provincial and federal governments and the dairy industry.

Current positions and comparative data for last year is as follows:

	1987-88	1988-89
Alberta Average Plant Score	84.3	83.3
National Average Plant Score	82.2	80.2
Lowest Scoring Plant in Alberta	72.7	75.8
Highest Scoring Plant in Alberta	98.6	98.4

Dairy Products

Bacteriological and compositional standards of fluid and manufactured dairy products remained very high and substantially higher than the regulatory minimum. The branch continued to concentrate on milk product keeping quality as reflected by a stressed product test as the yardstick by which quality was measured. This more stringent test is necessary since products must remain fully acceptable to consumers after sometimes lengthy period in the distribution system, not always under ideal storage conditions. Dairy processing specialists investigated isolated lapses in quality rather than chronic difficulties in producing satisfactory products.

Virtually all freshly processed milk met health standards. After subjection to severe conditions (7 days at 7°C), 76.3% were still within requirements of the regulations. The branch continues to work towards 100% compliance at both levels.

Licensing

Licenses Issued	1987-88	1988-89
Milk and Cream Graders & Testers	77	58
Cream Graders	65	36
Plant Milk Graders	117	112
Bulk Tank Milk Graders	242	235
Dairy Manufacturing Plants	49	47

Regulatory

Dairy Processing Specialist activities in regulatory functions were:

	1987-88	1988-89
Dairy Plant Inspections	508	562
Cream Grades Checked	1216	775
Cream Grades Adjusted	0	0
Cream Tests Checked	738	606
Cream Tests Adjusted	0	0
Bulk Tank Trucks & Drivers Inspected	208	163

Margarine

The branch's responsibilities under the Margarine Act were carried out at a similar level of activity as in previous years. Margarine produced and/or sold in the province was sampled and analyzed throughout the year and found to comply fully with compositional requirements.

Regulatory Enforcement

Two main incidents occurred during the year. A number of restaurants were found to be using a sour topping/sour dressing as a substitute for sour cream. The product was being distributed by six firms in the province. All parties were unaware this was an illegal product and all agreed to discontinue it.

The other incident involved imitation cheese, mainly imitation Mozzarella, for use in pizza parlours. Substantial quantities were being imported from the U.S. - shipments ranged from 11,000 to 20,000 pounds each, but could never be found at a central warehouse location. Numerous pizza parlours were found to be using the product often unaware of its illegality. The offending distributor assured the department he would discontinue importing this product. Despite this verbal assurance he continued importation. Some product has been seized and the branch is in consultation with the Crown Procecutor's office.

There are continued attempts to market imitation dairy products in contravention of the Dairy Industry Act. As well as infringing on the Dairy Industry Act, methods used by promoters frequently contravened other regulations, e.g. those of the Health Protection Branch and Consumer and Corporate Affairs.

Extension

Dairy processing specialists worked closely with dairy processors in the implementation of technological changes and in broadening the range of dairy processing in the province.

A major extension activity in recent years has been a voluntary certification program for dairy plant employees to assist in attaining improved quality through increased education and awareness. Lower turnover of staff in most dairy plants accounts for the reduction in issue of Dairy Plant Worker certificates. The awarding of certificates in specialist categories such as Cheesemaker and Plant Sanitarian has remained steady.

The licensing of Milk and Cream Graders and Testers, and Bulk Milk Graders is a legislative responsibility of this branch. In view of the important role of the Bulk Milk Grader in the collection of samples by which the producer is paid, especially since the introduction of the milk grade and price program, the branch has increased emphasis on testing, retesting and inspection of Bulk Milk Graders.

With the amendments to the Dairy Industry Regulation, it was felt necessary to revise the Bulk Milk Hauler's Manual, the study guide

used for the training and testing of the licensed bulk milk graders who pick up milk at the farm level.

Together with Agriculture Canada and the Alberta Dairymen's Association, the processing branch continues to be active in sponsoring and judging dairy product quality competitions. Most competitions are based on monthly samples. Winners are recognized annually at the Dairymen's Convention.

In June, the American Dairy Science Association (A.D.S.A.) held its 83rd Annual Meeting at the University of Alberta. Over 1,700 registered for this meeting which was the second time the A.D.S.A. has met in Canada. Branch staff actively participated in the organization of this event through representation on the Local Planning Committee and a number of sub-committees for specific events.

Special Projects

The principle activity of Special Projects early in the year was the introduction to the industry of amendments to the Dairy Industry Act and relevant changes in the Dairy Industry Regulations under the Act.

Other activities related to the investigation of the imitation dairy products situation; preliminary discussions on revising the Margarine Act; ongoing consultation with industry on regulatory and legislative matters; and investigating and assisting in the resolution of problems associated with the dairy industry.

Some time was devoted to aquaculture on behalf of the department. The branch provides a resource person to develop and maintain a close working relationship with the private and public sectors and to respond to requests for information.

TABLE I Estimated Production and Value of Factory Dairy Products April 1988 - March 1989

The following table shows the quantity, price and value of dairy products manufactured or processed in Alberta dairy manufacturing plants during April 1988 to March 1989, with corresponding figures for 1987-88 added to provide a means for comparison.

	Year	Quantity ' 000	Price $	Value $ '000
Creamery Butter (kgs)	1988-89	5,972 kg	4.406/kg	26,315
	1987-88	7,062 kg	5.461/kg	38,566
Cheddar Cheese (kgs)	1988-89	6,032 kg	6.566/kg	46,891
	1987-88	6,836 kg	6.714/kg	45,897
Variety Cheese (kgs)	1988-89	5,438 kg	6.046/kg	32,878
	1987-88	5,427 kg	5.906/kg	32,052
Ice Cream (litres)[1]	1988-89	29,425 L	1.930/L	56,790
	1987-88	29,695 L	1.860/L	55,233
Fluid Milk Sales (litres)[2]	1988-89	239,594 L	.809/L	193,832
	1987-88	218,474 L	.800/L	174,779
Fluid Cream Sales (litres)	1988-89	10,260 L	2.838/L	29,120
	1987-88	10,146 L	1.570/L	15,929
Fluid Buttermilk and Chocolate Milk (litres)	1988-89	16,693 L	1.048/L	17,474
	1987-88	38,360 L	.862/L	33,066
Miscellaneous Manufactured Products[3]	1988-89			118,745
	1987-88			119,597
TOTAL	1988-89			522,045
	1987-88			515,119

[1]Includes hard and soft ice cream.
[2]Skimmilk is included in these figures for 1988-89.
[3]Includes concentrated milk products, cottage cheese, whey cheese and yoghurt.

TABLE II Alberta Dairy Statistics 1960-1988

YEAR	TOTAL MILK	ICE CREAM		BUTTER	
	1,000,000 of Units	Production '000	# Plants	Production '000	# Plants
1960	1,650 lb	3,623 gal	18	37,338 lb	86
1965	1,641 lb	5,242 gal	16	36,562 lb	81
1970	1,529 lb	5,634 gal	16	29,311 lb	59
1973	1,396 lb	6,332 gal	15	23,282 lb	46
1974	1,284 lb	6,588 gal	16	18,695 lb	36
1975	1,276 lb	6,671 gal	16	20,587 lb	33
1976	1,273 lb	6,713 gal	14	17,843 lb	25
1977 (1)	1,251 lb	6,835 gal	11	18,342 lb	19
1978	426 L	31,859 L	10	6,946 kg	19
1979	450 L	30,343 L	10	7,117 kg	18
1980	480 L	31,906 L	10	7,863 kg	16
1981	528 L	27,873 L	8	8,260 kg	13
1982	585 L	27,797 L	8	8,475 kg	13
1983	564 L	30,891 L	8	7,800 kg	13
1984	584 L	31,457 L	9	8,161 kg	11
1985	562 L	31,287 L	10	6,372 kg	11
1986	579 L	31,108 L	10	7,409 kg	11
1987	589 L	29,695 L	11	7,062 kg	11
1988	609 L	30,064 L	15	7,019 kg	6

(1) Prior to 1977, yearly totals were calculated on a calendar year basis. From 1977 to date all figures are based on a fiscal year basis (April 1 - March 31).

Alberta Dairy Statistics 1960-1988

CHEDDAR CHEESE		VARIETY CHEESE		FLUID MILK SALES (2)
Production '000	# Plants	Production '000	# Plants	'000
1,760 lb	7	---		382,835 lb
2,188 lb	6	---		384,754 lb
3,357 lb	6	155 lb	3	414,034 lb
4,768 lb	6	913 lb	4	451,516 lb
4,884 lb	6	2,186 lb	6	466,816 lb
6,307 lb	7	2,406 lb	6	468,599 lb
6,872 lb	7	3,161 lb	6	175,219 qt
8,013 lb	6	4,557 lb	6	197,238 L
3,935 kg	6	2,386 kg	8	202,171 L
3,649 kg	6	3,007 kg	11	248,936 L
3,921 kg	6	3,159 kg	11	263,016 L
3,599 kg	6	3,321 kg	11	270,931 L
4,023 kg	6	3,651 kg	10	269,783 L
4,160 kg	6	3,533 kg	10	261,411 L
5,768 kg	6	3,787 kg	10	256,798 L
6,315 kg	6	5,220 kg	10	256,032 L
6,822 kg	6	5,022 kg	10	256,989 L
6,836 kg	7	5,427 kg	9	266,980 L
7,316 kg	7	5,505 kg	11	256,287 L

(2) Includes Homo, 2%, 1%, Chocolate, Skimmilk, Buttermilk and Eggnog.